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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/821,487   | 04/09/2004  | Sameh S. Rezeq       | TI-36599            | 1422             |
| 23494  | 7590        | 09/20/2005           | EXAMINER            |                  |
| TEXAS INSTRUMENTS INCORPORATED<br>P O BOX 655474, M/S 3999<br>DALLAS, TX 75265 |             |                      | WILLIAMS, HOWARD L  |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2819                |                  |
| DATE MAILED: 09/20/2005  |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                    |              |
|------------------------------|--------------------|--------------|
| <b>Office Action Summary</b> | Application No.    | Applicant(s) |
|                              | 10/821,487         | REZEQ ET AL. |
|                              | Examiner           | Art Unit     |
|                              | Howard L. Williams | 2819         |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-29 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) 1-29 is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                         |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____.<br>   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____.<br> | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)<br> |
|   | 6) <input type="checkbox"/> Other: _____.<br>                                   |

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless –*

*(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

Claims 1-28 are rejected under 35 U.S.C. 102(b) as anticipated by U.S. Patent 5079551 to Kimura et al. Kimura et al. discloses an accumulator system for a delta-sigma modulator with the bits grouped by significance to a lower order group and higher order group. The carry bits from each accumulator stage are separately determined and passed up to the corresponding stage. Pre-accumulator logic for the higher order accumulator chain is embodied in delay element 32; fig. 1. with various inter-accumulator delay embodied by delay elements 36, 38, 42, 46, 48 and 52; all in fig. 1. Applicant claims an additional accumulator chain in claims 6, 14 and 24; Kimura although illustrating two chains in the figures also discloses in column 6, lines 42-43 that the principles are applicable to tertiary or higher order  $\Sigma\Delta$  modulators also.

It is also notable that the description filed provides that the splitter, accumulators, and combiner employed in the disclosed circuit are described as conventional pages 9, 10, 13, 14 and 19.

Applicant's response filed 11 August 2005 have been fully considered but they are not persuasive. The response points out the claims call for a lower order accumulator chain for only lower order bits and a higher order accumulator chain for processing only higher order bits and urging that Kimura discloses an addition circuit for adding feedback digital data to input data. The previous action showed the grouping of bits by significance in Kimura. Only carry bits from the lower order chain (34, 45; fig. 1) add up as necessary just as done in the present application; otherwise the Kimura adder/integrator or "accumulator" chains process only low order bits (34, 45; fig. 1) or only high order bits (40, 50; fig. 1) as claimed.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard L. Williams at telephone number (571) 272-1815. The U.S. Patent and Trademark Office has a new facsimile number for application specific correspondence intended for entry, it is 571-273-8300.

9/16/05  
Voice: (571) 272-1815

  
Howard L. Williams  
Primary Examiner  
Art Unit 2819